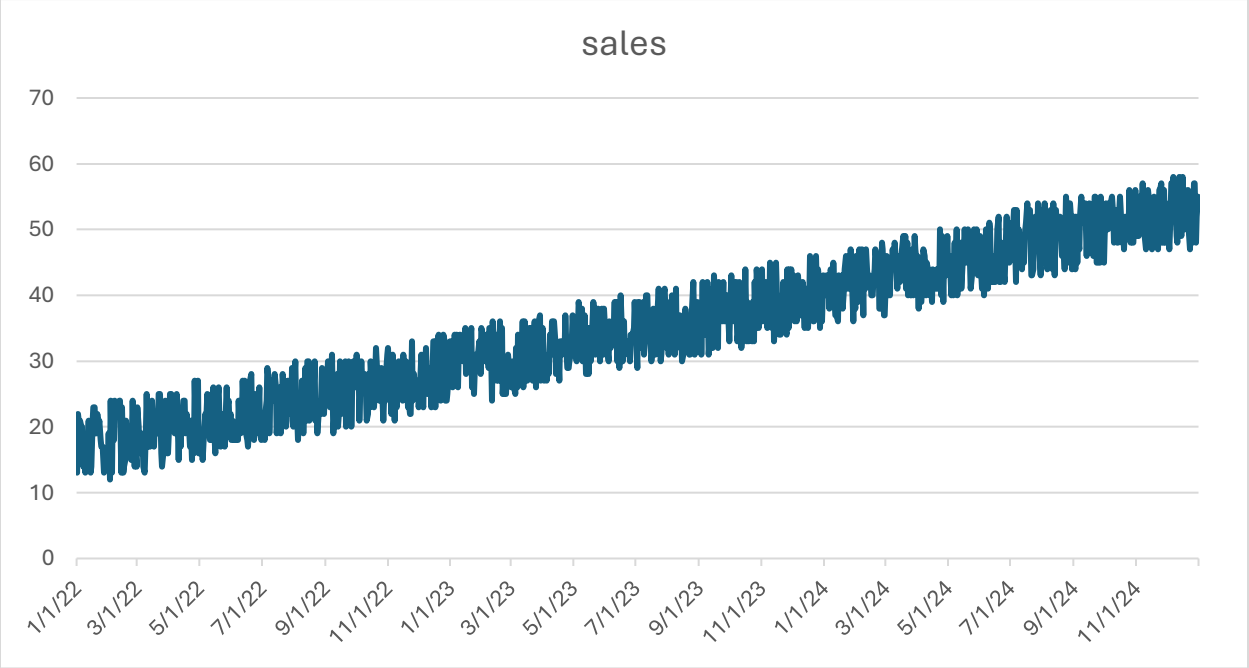
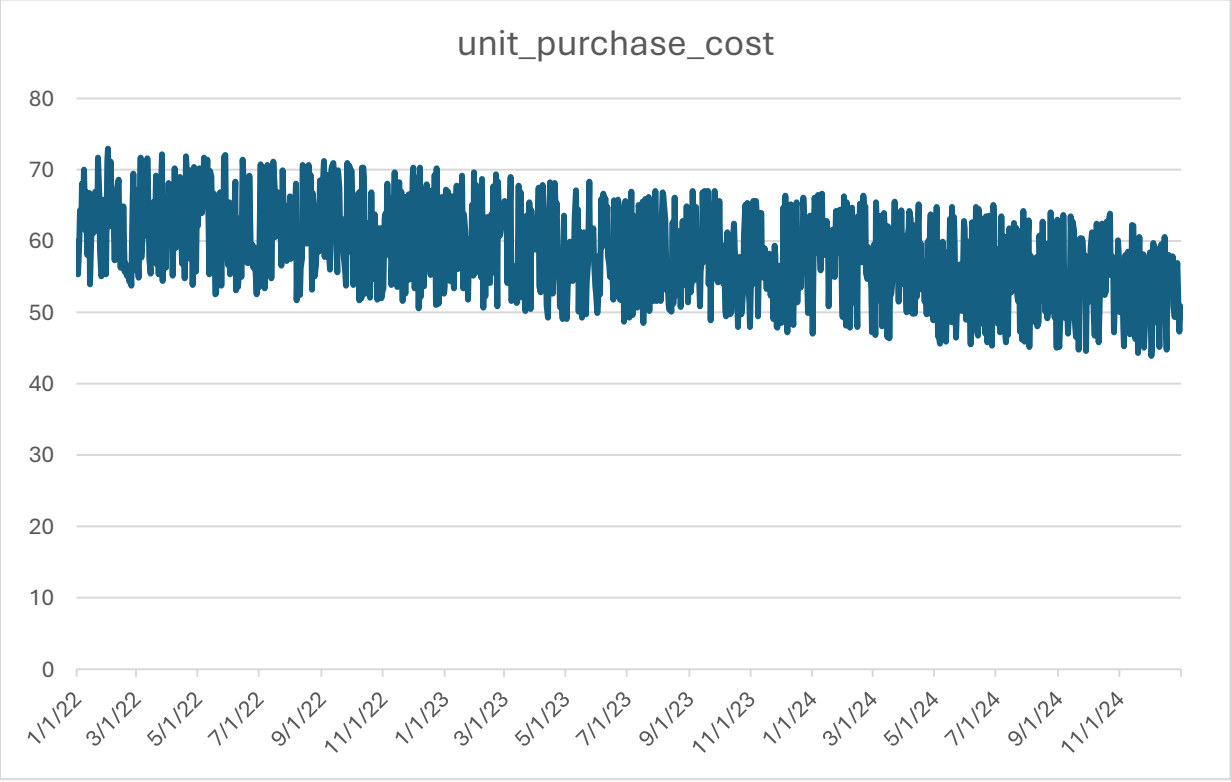
# Module 11 – EOQ

**Exploratory Data Analysis**



## Forecasted demand with Naive forecasting method:

| | |
|---|---|
| Forcasted 2025 | 17280 |

## Model Formulation

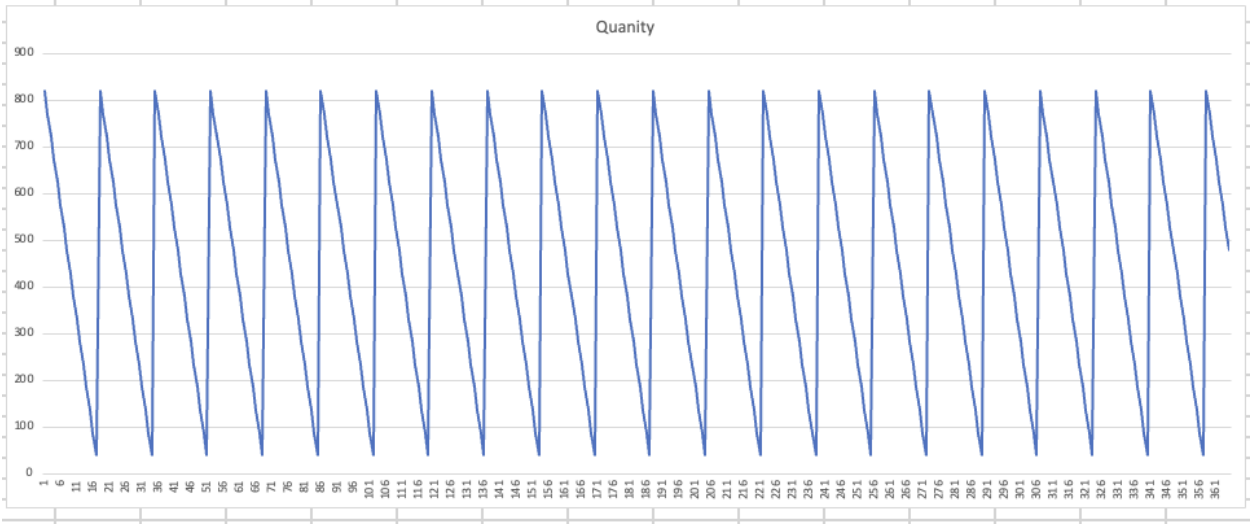
MIN: DC+(D/Q)S+(Q/2)Ci
Subject to Q >= 1

## Model Optimized for Minimizing Costs with Optimal Order Quantity

| holding_cost_rate | shortage_cost |
|---|---|
| 0.15 | 21 |

| | |
|---|---|
| Forcasted 2025 | 17280 |

| Variable | Year | 2025 |
|---|---|---|
| *D* | Annual Demand | 17820 |
| *C* | Cost per Unit | 58.43017336 |
| *S* | Cost per Order | 165.2399179 |
| *i* | Holding Cost | 2673 |
| *Q* | Order Quantity | 819.7135881 |
| | Purchasing Cost | $1,041,226 |
| | Cost of Ordering | $3,592 |
| | Inventory Cost | $3,592 |
| | Total Cost | $1,048,410 |

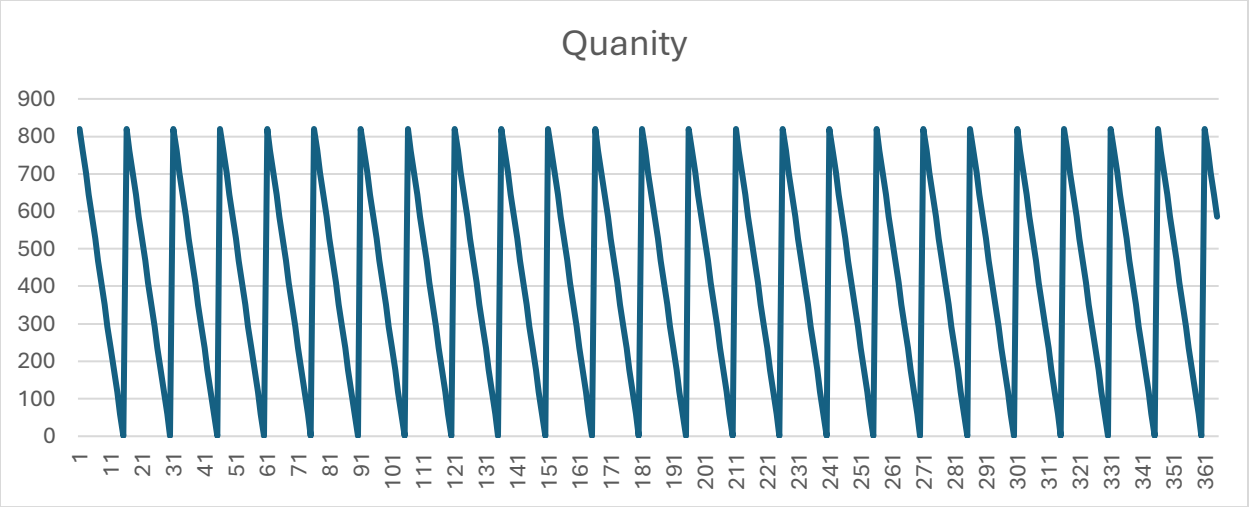


## Model with Stipulation

| holding_cost_rate | shortage_cost | |
|---|---|---|
| 0.15 | 21 | |
| Actual planned backorders | 0 | |
| | | |
| Forcasted 2025 | 17280 | |

| Variable | Year | 2025 |
|---|---|---|
| *D* | Annual Demand | 17820 |
| *C* | Cost per Unit | 58.43017336 |
| *S* | Cost per Order | 165.2399179 |
| *i* | Holding Cost | 2673 |
| | | |
| *Q* | Order Quantity | 819.7135881 |
| | | |
| | Cost of planned backorders | $0 |
| | Cost of Ordering | $3,592 |
| | Inventory Cost | $3,592 |
| | Total Cost | $0 |

| Total relevent cost | 64016605.63 |
|---|---|




*Including planned backorders, for out-of-stock purchases are important because it allows there to be cost efficiency and having a higher inventory to make sure no orders do go unfulfilled. Also, it helps account for fluctuations in demand, and at times with high demand that can be unexpected.*